

ABSTRACT

Education is essential for forming people and improving society at large. The active involvement of parents is a critical component in improving the quality of education, as it has a significant impact on the learning experiences of students in schools. The efficient management of student data and the lack of transparency in tracking students' progress at SMPN 1 Magetan, however, present a major obstacle. The goal of this research is to develop and implement an Education Management System (EMS) backend at SMPN 1 Magetan, with a particular emphasis on student management modules. This application's development is made to be adaptable to user needs and changes in the educational environment by utilizing an Iterative Incremental method and a Domain-Driven Design (DDD) approach in the application architecture. Findings from teacher, student, and parent user interviews show that accessing data about students, permissions, dispensations, violation logs, complaint forms, and attendance can be challenging. The EMS application aims to improve parental engagement by providing features that are transparent and easily accessible through effective backend development. With an emphasis on efficiency, the development process was divided into two main phases for the implementation of API functions. The application passed rigorous testing, which included load and unit tests, to guarantee that it is ready for use. It met expected quality standards, averaging 453.66 ms for 50–100 concurrent users. These findings demonstrate that creating a responsive and adaptive educational application can be achieved through the use of DDD architecture and the Iterative Incremental approach. In the context of Indonesian education, this research helps to leverage technology to support the development of future generations that are of the highest caliber and competitive worldwide.

Keywords—Education Management System, Education, Back End, Iterative Incremental, Domain Driven Design